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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,726	11/19/2001	Avi J. Ashkenazi	P2730PIC60	9979
35489	7590	03/09/2004	EXAMINER	
HELLER EHRMAN WHITE & MCAULIFFE LLP 275 MIDDLEFIELD ROAD MENLO PARK, CO 94025-3506			LANDSMAN, ROBERT S	
			ART UNIT	PAPER NUMBER

1647

DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/989,726	Applicant(s) GENENTECH, INC.
	Examiner Robert Landsman	Art Unit 1647

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 119-138 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 119-138 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/24/02</u> | 6) <input checked="" type="checkbox"/> Other: <u>Sequence Comparisons A+B</u> |

DETAILED ACTION

1. Formal Matters

- A. The Preliminary Amendment dated 11/19/01, has been entered into the record.
- B. Claims 119-138 are pending and are the subject of this Office Action.

2. Priority

Due to the excessive number of applications from which the present application claims benefit, priority cannot be determined. However, the Examiner has concluded that the subject matter defined in this application is not supported by any of the applications in the chain of priority because the presently claimed subject matter is not supported by a specific, substantial or well-established utility, nor, for this reason, is it enabled. Accordingly, the subject matter defined in claims 119-138 has an effective filing date of 11/19/01, which is the filing date of the present application.

Should the applicant disagree with the examiner's factual determination above, it is incumbent upon the applicant to provide the serial number and specific page number(s) of any parent application filed prior to 11/19/01 which specifically supports the particular claim limitation for each and every claim limitation in all the pending claims which applicant considers to have been in possession of and fully enabled for prior to 11/19/01.

3. Information Disclosure Statement

- A. References A1 and A2 on the IDS dated 5/24/02 have been lined through since they are not in proper format, including author and date of deposit.

4. Specification

- A. Though none could be found, due to the length of the specification, Applicants are reminded that embedded hyperlink and/or other form of browser-executable code are not permitted in the specification. See MPEP § 608.01.
- B. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title recites polypeptides and polynucleotides whereas the claims are drawn to polynucleotides.

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5. Claim Objections

A. The syntax of claims 119-138 could be improved by replacing the phrase “shown in Figure 233 (SEQ ID NO:326)” with “of SEQ ID NO:326” and “shown in Figure 232 (SEQ ID NO:325)” with “of SEQ ID NO:325” where appropriate.

6. Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

A. Claims 119-138 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by a specific, substantial and credible asserted utility or a well established utility. These claims are directed to polynucleotides having various sequence homology to SEQ ID NO:325, or encoding SEQ ID NO:326. However, the invention encompassed by these claims has no apparent or disclosed patentable utility. This rejection is consistent with the current utility guidelines, published 1/5/01, 66 FR 1092. The instant application has provided a description of an isolated protein and its encoding polynucleotide. However, the instant application does not disclose a specific and substantial biological role of this protein or its significance.

However, it is clear from the instant specification that the claimed protein is what is termed an “orphan receptor” in the art. The instant application does not disclose the biological role of the claimed protein or its significance. Applicants disclose in the specification that the receptor is a secreted protein. However, this fact, alone, is insufficient to confer utility to the protein of the present invention. Therefore, the instant claims are drawn to a polynucleotide encoding a protein which has a yet undetermined function or biological significance. There is no actual and specific significance which can be attributed to said protein identified in the specification. For this reason, the instant invention is incomplete. In the absence of a knowledge of the natural ligands or biological significance of this protein, there is no immediately obvious patentable use for it. To employ a protein of the instant invention in the identification of substances which bind to and/or mediate activity of the said receptor is clearly to use it as the object of further research which has been determined by the courts to be a non-patentable utility. Since the instant specification does not disclose a “real-world” use for said protein then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. 101 as being useful.

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Furthermore, since the protein of the invention is not supported by a specific and substantial asserted utility or a well established utility, the encoding polynucleotides, vectors, host cells and methods of making the protein also lack utility.

7. Claim Rejections - 35 USC § 112, first paragraph - enablement

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

A. Claims 119-138 are rejected under 35 U.S.C. 112, first paragraph, as failing to adequately teach how to use the instant invention. Specifically, since the claimed invention is not supported by a specific, substantial and credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

B. Claims 119-138 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The deposit of the biological material is considered necessary for the enablement of the current invention (see MPEP Chapter 2400 and 37 C.F.R. §§ 1.801-1.809). Elements required for practicing a claimed invention must be known and readily available to the public or obtainable by a repeatable method set forth in the specification. If a deposit (203129) is made under the terms of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (e.g. see 961 OG 21, 1977), and Applicants, their assignee or their agent needs to provide a declaration containing the following:

1. the current address of the ATCC.
2. a declaration, or statement over attorney's signature stating that all restrictions imposed by the depositor on the availability to the public of the deposited biological material be irrevocably removed upon the granting of the patent (see MPEP Chapter 2410.01 and 37 C.F.R. § 1.808).

C. Furthermore, even if the claims possessed utility under 35 USC 101, claims 119-138 would still be rejected under 35 USC 112, first paragraph, because the specification, while then being enabling for SEQ ID NO:325 and 326, does not reasonably provide enablement for polynucleotides or polypeptides having at least 80%, 85%, 90%, 95% or 99% sequence identity to SEQ ID NO:325 or 326, to the protein

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encoded by ATCC No. 203129, for the extracellular domain thereof, or for vectors and host cells containing these polynucleotides. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. There is no functional limitation in the claims. The claims encompass an unreasonable number of inoperative polypeptides, or polynucleotides which encode these polypeptides, which the skilled artisan would not know how to use.

There are no working examples of polynucleotides or polypeptides less than 100% identical to SEQ ID NO:325 or 326, or the mature form thereof (i.e. lacking its signal peptide). The skilled artisan would not know how to use non-identical polypeptides or polynucleotides on the basis of teachings in the prior art or specification unless they possessed a specific function disclosed in the instant specification, in which there is none. While the specification generally describes homologous proteins, Applicants still have not taught to which family of proteins the protein of the present invention belongs. The specification does not provide guidance for using polynucleotides encoding polypeptides related to (*i.e.*, 80%-99% identity) but not identical to SEQ ID NO:325 or 326 which do not have any specific, known function. The claims are broad because they do not require the claimed polypeptide to be identical to the disclosed sequence and because the claims have no functional limitation.

For these reasons, which include the complexity and unpredictability of the nature of the invention and art in terms of the diversity of proteins and lack of knowledge about function(s) of encompassed polypeptides structurally related to SEQ ID NO:326, or their encoding polynucleotides (e.g. SEQ ID NO:325) the lack of direction or guidance for using polypeptides that are not identical to SEQ ID NO:326, and the breadth of the claims for structure without function, it would require undue experimentation to use the invention commensurate in scope with the claims.

8. Claim Rejections - 35 USC § 112, first paragraph – written description

A. Claims 119-138 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to polynucleotides having at least 80%, 85%, 90%, 95% or 99% sequence identity with SEQ ID NO:325 as well as vectors and host cells. The claims do not require that the polynucleotides or encoded polypeptides of the present invention possess any particular biological

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activity, nor any particular conserved structure, or other disclosed distinguishing feature. Thus, the claims are drawn to a genus of polypeptides that is defined only by sequence identity.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claim is a partial structure in the form of a recitation of percent identity. There is not even identification of any particular portion of the structure that must be conserved. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states “applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the ‘written description’ inquiry, *whatever is now claimed*.” (See page 1117.) The specification does not “clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed.” (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF’s were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated polypeptides comprising the amino acid sequence set forth in SEQ ID NO:314, or encoded by SEQ ID NO:325, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

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9. Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 119-138 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claims 119-138 are vague and indefinite since it is not clear whether or not the protein encoded by the polynucleotide of the present invention is a soluble protein (e.g. protease), nor is it disclosed as being expressed on a cell surface. Accordingly, the limitation that the claimed protein comprises an "extracellular domain" is indefinite, as the art does not recognize soluble proteins as having such domains. Further, if the protein had an extracellular domain, the recitation of "the extracellular domain"..."lacking its associated signal sequence" is indefinite as a signal sequence is not generally considered to be part of an extracellular domain, as signal sequences are cleaved from said domains in the process of secretion from the cell.

B. Claims 132-134 are vague and indefinite since the claim recites "hybridizes" without the recitation of any conditions, or recites "stringent conditions: wherein these conditions are not known. Nucleic acid molecules which hybridize under conditions of "low" stringency would not necessarily hybridize under conditions of "high" stringency. Furthermore, not all conditions of "high" or "low" stringency, for example, are the same. Therefore, it is required that Applicants amend the claims to recite the exact hybridization conditions without using indefinite phrases such as "*for example*" **without adding new matter**.

10. Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

A. Claims 119-138 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker et al. (WO 99/63088). The claims recite a polynucleotide at least 80% identical to that of SEQ ID NO: ³²⁵~~182~~ or encoding ³²⁶~~233~~, as well as fragments thereof. The claims also recite nucleic acid molecules which hybridize

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34/14

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to SEQ ID NO:325, or one encoding SEQ ID NO:326 as well as vectors and host cells. Baker teach a polynucleotide which is 100% identical to SEQ ID NO:325 (Sequence Comparisons A and B) as well as vectors and host cells (pages 352-355). This nucleic acid molecule will hybridize to that of the present invention even under the most stringent conditions.

11. Conclusion

A. No claim is allowable.

Advisory information


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Landsman whose telephone number is (703) 306-3407. The examiner can normally be reached on Monday - Friday from 8:00 AM to 5:00 PM (Eastern time) and alternate Fridays from 8:00 AM to 5:00 PM (Eastern time).

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Gary Kunz, can be reached on (703) 308-4623.

Official papers filed by fax should be directed to (703) 308-4242. Fax draft or informal communications with the examiner should be directed to (703) 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Robert Landsman, Ph.D.
Patent Examiner
Group 1600
March 05, 2004


ROBERT LANDSMAN
PATENT EXAMINER

SEQ ID NO:325

Sequence Comparison *RA*
A

ID AAZ65074 standard; cDNA; 2988 BP.
XX
AC AAZ65074;
XX
DT 05-APR-2000 (first entry)
XX
DE Membrane-bound protein PRO1281 encoding cDNA.
XX
KW Membrane-bound polypeptide; PRO polypeptide; LDL receptor; TIE ligand;
KW pharmaceutical; receptor immunoadhesin; gene mapping; ss.
XX
OS ~~Homo sapiens.~~
XX
PN WO9963088-A2.
XX
PD 09-DEC-1999.
XX
PF 02-JUN-1999; 99WO-US12252.
XX
PA (GETH) GENENTECH INC.
XX
PI Baker K, Chen J, Goddard A, Gurney AL, Smith V, Watanabe CK;
PI Wood WI, Yuan J;
XX
DR WPI; 2000-072883/06.
DR P-PSDB; AAY66729.
XX
PT Membrane-bound proteins and related nucleotide sequences -
XX
PS Claim 2; Fig 232; 822pp; English.
XX
CC The invention provides membrane-bound PRO polypeptides and
CC polynucleotides encoding them. The PRO sequences of the invention were
CC identified based on extracellular domain homology screening. The PRO
CC sequences have homology with proteins including LDL receptors, TIE
CC ligands and various enzymes. The membrane-bound proteins and receptor
CC molecules are useful as pharmaceutical and diagnostic agents. Receptor
CC immunoadhesins, for instance, can be used as therapeutic agents to block
CC receptor-ligand interactions. The membrane-bound proteins can also be
CC employed for screening of potential peptide or small molecule inhibitors
CC of the relevant receptor/ligand interaction. The PRO encoding sequences
CC are useful as hybridization probes, in chromosome and gene mapping and in
CC the generation of antisense RNA and DNA. PRO nucleic acid sequences
CC will also be useful for the preparation of PRO polypeptides, especially
CC by recombinant techniques.
XX
SQ Sequence 2988 BP; 464 A; 1059 C; 962 G; 503 T; 0 other;

Query Match 100.0%; Score 2988; DB 21; Length 2988;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 2988; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 GCCGAGCGCAAGAACCCTGCGCAGCCAGAGCAGCTGCTGGAGGGGAATCGAGGCGCGGC 60
|||||
Db 1 GCCGAGCGCAAGAACCCTGCGCAGCCAGAGCAGCTGCTGGAGGGGAATCGAGGCGCGGC 60

Qy 61 TCCGGGGATTTCGGCTCGGGCCGCTGGCTCTGCTCTGCGGGGAGGGAGCGGGCCCCCGCCGC 120
|||||
Db 61 TCCGGGGATTTCGGCTCGGGCCGCTGGCTCTGCTCTGCGGGGAGGGAGCGGGCCCCCGCCGC 120

Qy	121	GGGGCCCCGAGCCCTCCGGATCCGCCCCCTCCCCGGTCCCGCCCCCTCGGAGACTCCTCTG	180
Db	121	GGGGCCCCGAGCCCTCCGGATCCGCCCCCTCCCCGGTCCCGCCCCCTCGGAGACTCCTCTG	180
Qy	181	GCTGCTCTGGGGGTTCCGCCGGGGCCGGGACCCGCGGTCCGGGCGCCATGCGGGCATCGC	240
Db	181	GCTGCTCTGGGGGTTCCGCCGGGGCCGGGACCCGCGGTCCGGGCGCCATGCGGGCATCGC	240
Qy	241	TGCTGCTGTGCGGTGCTGCGGCCCGCAGGGCCCGTGGCCGTGGGCATCTCCCTGGGCTTCA	300
Db	241	TGCTGCTGTGCGGTGCTGCGGCCCGCAGGGCCCGTGGCCGTGGGCATCTCCCTGGGCTTCA	300
Qy	301	CCCTGAGCCTGCTCAGCGTCACCTGGGTGGAGGAGCCGTGCGGCCCAGGCCCGCCCCAAC	360
Db	301	CCCTGAGCCTGCTCAGCGTCACCTGGGTGGAGGAGCCGTGCGGCCCAGGCCCGCCCCAAC	360
Qy	361	CTGGAGACTCTGAGCTGCCGCCGCGCGGCAACACCAACGCGGCGCGCCGGCCCCAACTCGG	420
Db	361	CTGGAGACTCTGAGCTGCCGCCGCGCGGCAACACCAACGCGGCGCGCCGGCCCCAACTCGG	420
Qy	421	TGCAGCCCGGAGCGGAGCGCGAGAAGCCCGGGGCCGGCGAAGGCGCCGGGGAGAATTGGG	480
Db	421	TGCAGCCCGGAGCGGAGCGCGAGAAGCCCGGGGCCGGCGAAGGCGCCGGGGAGAATTGGG	480
Qy	481	AGCCGCGCGTCTTGCCCTACCACCTGCACAGCCCGGCCAGGCCGCCAAAAAGGCCGTCA	540
Db	481	AGCCGCGCGTCTTGCCCTACCACCTGCACAGCCCGGCCAGGCCGCCAAAAAGGCCGTCA	540
Qy	541	GGACCCGCTACATCAGCACGGAGCTGGGCATCAGGCAGAGGCTGCTGGTGGCGGTGCTGA	600
Db	541	GGACCCGCTACATCAGCACGGAGCTGGGCATCAGGCAGAGGCTGCTGGTGGCGGTGCTGA	600
Qy	601	CCTCTCAGACCACGCTGCCCACGCTGGGCGTGGCCGTGAACCGCACGCTGGGGCACCGGC	660
Db	601	CCTCTCAGACCACGCTGCCCACGCTGGGCGTGGCCGTGAACCGCACGCTGGGGCACCGGC	660
Qy	661	TGGAGCGTGTGGTGTTCCTGACGGGCGCACGGGGCCGCGGGCCCCACCTGGCATGGCAG	720
Db	661	TGGAGCGTGTGGTGTTCCTGACGGGCGCACGGGGCCGCGGGCCCCACCTGGCATGGCAG	720
Qy	721	TGGTGACGCTGGGCGAGGAGCGACCCATTGGACACCTGCACCTGGCGCTGCGCCACCTGC	780
Db	721	TGGTGACGCTGGGCGAGGAGCGACCCATTGGACACCTGCACCTGGCGCTGCGCCACCTGC	780
Qy	781	TGGAGCAGCACGGCGACGACTTTGACTGGTTCTTCCTGGTGCCTGACACCACCTACACCG	840
Db	781	TGGAGCAGCACGGCGACGACTTTGACTGGTTCTTCCTGGTGCCTGACACCACCTACACCG	840
Qy	841	AGGCGCACGGCCTGGCACGCCTAACTGGCCACCTCAGCCTGGCCTCCGCCGCCACCTGT	900
Db	841	AGGCGCACGGCCTGGCACGCCTAACTGGCCACCTCAGCCTGGCCTCCGCCGCCACCTGT	900
Qy	901	ACCTGGGCCGGCCCCAGGACTTCATCGGCGGAGAGCCACCCCCGGCCGCTACTGCCACG	960
Db	901	ACCTGGGCCGGCCCCAGGACTTCATCGGCGGAGAGCCACCCCCGGCCGCTACTGCCACG	960
Qy	961	GAGGCTTTGGGGTGCTGCTGTGCGCGATGCTGCTGCAACAACCTGCGCCCCACCTGGAAG	1020
Db	961	GAGGCTTTGGGGTGCTGCTGTGCGCGATGCTGCTGCAACAACCTGCGCCCCACCTGGAAG	1020
Qy	1021	GCTGCCGCAACGACATCGTCAGTGCGCGCCCTGACGAGTGGCTGGGTGCTGCATTCTCG	1080
Db	1021	GCTGCCGCAACGACATCGTCAGTGCGCGCCCTGACGAGTGGCTGGGTGCTGCATTCTCG	1080

Qy	1081	ATGCCACCGGGTGGGCTGCACTGGTGACCACGAGGGGTGCACTATAGCCATCTGGAGC	1140
Db	1081	ATGCCACCGGGTGGGCTGCACTGGTGACCACGAGGGGTGCACTATAGCCATCTGGAGC	1140
Qy	1141	TGAGCCCTGGGGAGCCAGTGCAGGAGGGGACCCTCATTTCCGAAGTGCCCTGACAGCCC	1200
Db	1141	TGAGCCCTGGGGAGCCAGTGCAGGAGGGGACCCTCATTTCCGAAGTGCCCTGACAGCCC	1200
Qy	1201	ACCCTGTGCGTGACCCTGTGCACATGTACCAGCTGCACAAAGCTTTCGCCCAGCTGAAC	1260
Db	1201	ACCCTGTGCGTGACCCTGTGCACATGTACCAGCTGCACAAAGCTTTCGCCCAGCTGAAC	1260
Qy	1261	TGGAACGCACGTACCAGGAGATCCAGGAGTTACAGTGGGAGATCCAGAATACCAGCCATC	1320
Db	1261	TGGAACGCACGTACCAGGAGATCCAGGAGTTACAGTGGGAGATCCAGAATACCAGCCATC	1320
Qy	1321	TGGCCGTTGATGGGGACCGGGCAGCTGCTTGGCCCGTGGGTATTCAGCACCATCCCGCC	1380
Db	1321	TGGCCGTTGATGGGGACCGGGCAGCTGCTTGGCCCGTGGGTATTCAGCACCATCCCGCC	1380
Qy	1381	CGGCCTCCCGCTTTGAGGTGCTGCGCTGGGACTACTTCACGGAGCAGCACGCTTCTCCT	1440
Db	1381	CGGCCTCCCGCTTTGAGGTGCTGCGCTGGGACTACTTCACGGAGCAGCACGCTTCTCCT	1440
Qy	1441	GCGCCGATGGCTCACCCCGCTGCCCACTGCGTGGGGCTGACCGGGCTGATGTGGCCGATG	1500
Db	1441	GCGCCGATGGCTCACCCCGCTGCCCACTGCGTGGGGCTGACCGGGCTGATGTGGCCGATG	1500
Qy	1501	TTCTGGGGACAGCTCTAGAGGAGCTGAACCGCCGCTACCAACCGGCCTTGCGGCTCCAGA	1560
Db	1501	TTCTGGGGACAGCTCTAGAGGAGCTGAACCGCCGCTACCAACCGGCCTTGCGGCTCCAGA	1560
Qy	1561	AGCAGCAGCTGGTGAATGGCTACCGACGCTTTGATCCGGCCCGGGTATGGAATACACGC	1620
Db	1561	AGCAGCAGCTGGTGAATGGCTACCGACGCTTTGATCCGGCCCGGGTATGGAATACACGC	1620
Qy	1621	TGGACTTGACAGCTGGAGGCACTGACCCCCAGGGAGGCCGCCGCCCTCACTCGCCGAG	1680
Db	1621	TGGACTTGACAGCTGGAGGCACTGACCCCCAGGGAGGCCGCCGCCCTCACTCGCCGAG	1680
Qy	1681	TGCAGCTGCTCCGGCCGCTGAGCCGCGTGGAGATCTTGCCCTGTGCCCTATGTCACTGAGG	1740
Db	1681	TGCAGCTGCTCCGGCCGCTGAGCCGCGTGGAGATCTTGCCCTGTGCCCTATGTCACTGAGG	1740
Qy	1741	CCTCACGTCTCACTGTGCTGCTGCCTCTAGCTGCGGCTGAGCGTGACCTGGCCCCCTGGCT	1800
Db	1741	CCTCACGTCTCACTGTGCTGCTGCCTCTAGCTGCGGCTGAGCGTGACCTGGCCCCCTGGCT	1800
Qy	1801	TCTTGAGGCCTTTGCCACTGCAGCACTGGAGCCTGGTGATGCTGCGGCAGCCCTGACCC	1860
Db	1801	TCTTGAGGCCTTTGCCACTGCAGCACTGGAGCCTGGTGATGCTGCGGCAGCCCTGACCC	1860
Qy	1861	TGCTGCTACTGTATGAGCCGCGCCAGGCCAGCGCGTGGCCCATGCAGATGTCTTCGCAC	1920
Db	1861	TGCTGCTACTGTATGAGCCGCGCCAGGCCAGCGCGTGGCCCATGCAGATGTCTTCGCAC	1920
Qy	1921	CTGTCAAGGCCCCACGTGGCAGAGCTGGAGCGGCGTTTCCCCGGTGCCCGGTGCCATGGC	1980
Db	1921	CTGTCAAGGCCCCACGTGGCAGAGCTGGAGCGGCGTTTCCCCGGTGCCCGGTGCCATGGC	1980
Qy	1981	TCAGTGTGCAGACAGCCGCACCCTCACCACTGCGCCTCATGGATCTACTCTCCAAGAAGC	2040
Db	1981	TCAGTGTGCAGACAGCCGCACCCTCACCACTGCGCCTCATGGATCTACTCTCCAAGAAGC	2040

Qy	2041	ACCCGCTGGACACACTGTTCTCTGCTGGCCGGGCCAGACACGGTGCTCACGCCTGACTTCC	2100
Db	2041	ACCCGCTGGACACACTGTTCTCTGCTGGCCGGGCCAGACACGGTGCTCACGCCTGACTTCC	2100
Qy	2101	TGAACCGCTGCCGCATGCATGCCATCTCCGGCTGGCAGGCCTTCTTTCCCATGCATTTCC	2160
Db	2101	TGAACCGCTGCCGCATGCATGCCATCTCCGGCTGGCAGGCCTTCTTTCCCATGCATTTCC	2160
Qy	2161	AAGCCTTCCACCCAGGTGTGGCCCCACCACAAGGGCCTGGGCCCCAGAGCTGGGCCGTG	2220
Db	2161	AAGCCTTCCACCCAGGTGTGGCCCCACCACAAGGGCCTGGGCCCCAGAGCTGGGCCGTG	2220
Qy	2221	ACACTGGCCGCTTTGATCGCCAGGCAGCCAGCGAGGCCTGCTTCTACAACCTCCGACTACG	2280
Db	2221	ACACTGGCCGCTTTGATCGCCAGGCAGCCAGCGAGGCCTGCTTCTACAACCTCCGACTACG	2280
Qy	2281	TGGCAGCCCGTGGGCGCCTGGCGGCAGCCTCAGAACAAGAAGAGGAGCTGCTGGAGAGCC	2340
Db	2281	TGGCAGCCCGTGGGCGCCTGGCGGCAGCCTCAGAACAAGAAGAGGAGCTGCTGGAGAGCC	2340
Qy	2341	TGGATGTGTACGAGCTGTTCTCTCCACTTCTCCAGTCTGCATGTGCTGCGGGCGGTGGAGC	2400
Db	2341	TGGATGTGTACGAGCTGTTCTCTCCACTTCTCCAGTCTGCATGTGCTGCGGGCGGTGGAGC	2400
Qy	2401	CGGCGCTGCTGCAGCGCTACCGGGCCCAGACGTGCAGCGCGAGGCTCAGTGAGGACCTGT	2460
Db	2401	CGGCGCTGCTGCAGCGCTACCGGGCCCAGACGTGCAGCGCGAGGCTCAGTGAGGACCTGT	2460
Qy	2461	ACCACCGCTGCCTCCAGAGCGTGCTTGAGGGCCTCGGCTCCCGAACCCAGCTGGCCATGC	2520
Db	2461	ACCACCGCTGCCTCCAGAGCGTGCTTGAGGGCCTCGGCTCCCGAACCCAGCTGGCCATGC	2520
Qy	2521	TACTCTTTGAACAGGAGCAGGGCAACAGCACCTGACCCCAACCCTGTCCCGTGGGCCGTG	2580
Db	2521	TACTCTTTGAACAGGAGCAGGGCAACAGCACCTGACCCCAACCCTGTCCCGTGGGCCGTG	2580
Qy	2581	GCATGGCCACACCCCAACCCACTTCTCCCCAAAACAGAGCCACCTGCCAGCCTCGCTG	2640
Db	2581	GCATGGCCACACCCCAACCCACTTCTCCCCAAAACAGAGCCACCTGCCAGCCTCGCTG	2640
Qy	2641	GGCAGGGCTGGCCGTAGCCAGACCCCAAGCTGGCCCACTGGTCCCCTCTCTGGCTCTGTG	2700
Db	2641	GGCAGGGCTGGCCGTAGCCAGACCCCAAGCTGGCCCACTGGTCCCCTCTCTGGCTCTGTG	2700
Qy	2701	GGTCCCTGGGCTCTGGACAAGCACTGGGGGACGTGCCCCCAGAGCCACCCACTTCTCATC	2760
Db	2701	GGTCCCTGGGCTCTGGACAAGCACTGGGGGACGTGCCCCCAGAGCCACCCACTTCTCATC	2760
Qy	2761	CCAAACCCAGTTTCCCTGCCCCCTGACGCTGCTGATTGCGGCTGTGGCCTCCACGTATTT	2820
Db	2761	CCAAACCCAGTTTCCCTGCCCCCTGACGCTGCTGATTGCGGCTGTGGCCTCCACGTATTT	2820
Qy	2821	ATGCAGTACAGTCTGCCTGACGCCAGCCCTGCCTCTGGGCCCTGGGGCTGGGCTGTAGA	2880
Db	2821	ATGCAGTACAGTCTGCCTGACGCCAGCCCTGCCTCTGGGCCCTGGGGCTGGGCTGTAGA	2880
Qy	2881	AGAGTTGTTGGGGAAGGAGGGAGCTGAGGAGGGGGCATCTCCCAACTTCTCCCTTTTGA	2940
Db	2881	AGAGTTGTTGGGGAAGGAGGGAGCTGAGGAGGGGGCATCTCCCAACTTCTCCCTTTTGA	2940
Qy	2941	CCCTGCCGAAGCTCCCTGCCTTTAATAAACTGGCCAAGTGTTGGAAAAA	2988
Db	2941	CCCTGCCGAAGCTCCCTGCCTTTAATAAACTGGCCAAGTGTTGGAAAAA	2988

B

B

Pred. No.:	2.74e-224	Length:	2988
Score:	4074.00	Matches:	775
Percent Similarity:	100.00%	Conservative:	0
Best Local Similarity:	100.00%	Mismatches:	0
Query Match:	100.00%	Indels:	0
DB:	21	Gaps:	0

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Qy	1	MetArgAlaSerLeuLeuLeuSerValLeuArgProAlaGlyProValAlaValGlyIle	20
Db	228	ATCGCGGCATCGCTGCTGCTGTGCGGTGCTGCGGCCCGCAGGGCCCGTGGCCGTGGGCATC	287
Qy	21	SerLeuGlyPheThrLeuSerLeuLeuSerValThrTrpValGluGluProCysGlyPro	40
Db	288	TCCCTGGGCTTCACCCTGAGCCTGCTCAGCGTCACCTGGGTGGAGGAGCCGTGCGGCCCA	347
Qy	41	GlyProProGlnProGlyAspSerGluLeuProProArgGlyAsnThrAsnAlaAlaArg	60
Db	348	GGCCCGCCCCAACCTGGAGACTCTGAGCTGCCGCCGCGCGCAACACCAACGCGGCGCGC	407
Qy	61	ArgProAsnSerValGlnProGlyAlaGluArgGluLysProGlyAlaGlyGluGlyAla	80
Db	408	CGGCCCAACTCGGTGCAGCCCGGAGCGGAGCGGAGAAGCCCGGGGCCGCGCAAGGCGCC	467
Qy	81	GlyGluAsnTrpGluProArgValLeuProTyrHisProAlaGlnProGlyGlnAlaAla	100
Db	468	GGGGAGAATTGGGAGCCGCGCTCTTGCCCTACCACCCTGCACAGCCCGCCAGGCCGCC	527
Qy	101	LysLysAlaValArgThrArgTyrIleSerThrGluLeuGlyIleArgGlnArgLeuLeu	120
Db	528	AAAAAGGCCGTGAGACCCGCTACATCAGCACGGAGCTGGGCATCAGGCAGAGGCTGCTG	587
Qy	121	ValAlaValLeuThrSerGlnThrThrLeuProThrLeuGlyValAlaValAsnArgThr	140
Db	588	GTGGCGGTGCTGACCTCTCAGACCACGCTGCCCACGCTGGGCGTGGCCGTGAACCGCACG	647
Qy	141	LeuGlyHisArgLeuGluArgValValPheLeuThrGlyAlaArgGlyArgArgAlaPro	160
Db	648	CTGGGGCACCGGTGGAGCGTGTGGTGTCTCTGACGGGCGCACGGGGCCCGCGGCCCA	707
Qy	161	ProGlyMetAlaValValThrLeuGlyGluGluArgProIleGlyHisLeuHisLeuAla	180
Db	708	CCTGGCATGGCAGTGGTGACGCTGGGCGAGGAGCGACCCATTGGACACCTGCACCTGGCG	767
Qy	181	LeuArgHisLeuLeuGluGlnHisGlyAspAspPheAspTrpPhePheLeuValProAsp	200
Db	768	CTGCGCCACCTGCTGGAGCAGCACGGCGACGACTTTGACTGGTTCTCTGGTGCCTGAC	827
Qy	201	ThrThrTyrThrGluAlaHisGlyLeuAlaArgLeuThrGlyHisLeuSerLeuAlaSer	220
Db	828	ACCACCTACACGAGGCGCACGGCCTGGCACGCCTAACTGGCCACCTCAGCTGGCCTCC	887
Qy	221	AlaAlaHisLeuTyrLeuGlyArgProGlnAspPheIleGlyGlyGluProThrProGly	240
Db	888	GCCGCCACCTGTACCTGGGCGGGCCCCAGGACTTCATCGGCGGAGAGCCCAACCCCGGC	947

Qy	241	ArgTyrCysHisGlyGlyPheGlyValLeuLeuSerArgMetLeuLeuGlnGlnLeuArg	260
Db	948	CGCTACTGCCACGGAGGCTTTGGGGTGCTGCTGTCGCGCATGCTGCTGCAACAACCTGCGC	1007
Qy	261	ProHisLeuGluGlyCysArgAsnAspIleValSerAlaArgProAspGluTrpLeuGly	280
Db	1008	CCCCACCTGGAAGGCTGCCGCAACGACATCGTCAGTGCGCGCCCTGACGAGTGGCTGGGT	1067
Qy	281	ArgCysIleLeuAspAlaThrGlyValGlyCysThrGlyAspHisGluGlyValHisTyr	300
Db	1068	CGCTGCATTCTCGATGCCACCGGGGTGGGCTGCACTGGTGACCACGAGGGGTGCACTAT	1127
Qy	301	SerHisLeuGluLeuSerProGlyGluProValGlnGluGlyAspProHisPheArgSer	320
Db	1128	AGCCATCTGGAGCTGAGCCCTGGGGAGCCAGTGCAGGAGGGGACCCTCATTTCCGAAGT	1187
Qy	321	AlaLeuThrAlaHisProValArgAspProValHisMetTyrGlnLeuHisLysAlaPhe	340
Db	1188	GCCCTGACAGCCACCCCTGTGCGTGACCCGTGCACATGTACCAGCTGCACAAAGCTTTC	1247
Qy	341	AlaArgAlaGluLeuGluArgThrTyrGlnGluIleGlnGluLeuGlnTrpGluIleGln	360
Db	1248	GCCCGAGCTGAACCTGGAACGCACGTACCAGGAGATCCAGGAGTTACAGTGGGAGATCCAG	1307
Qy	361	AsnThrSerHisLeuAlaValAspGlyAspArgAlaAlaAlaTrpProValGlyIlePro	380
Db	1308	AATACCAGCCATCTGGCCGTTGATGGGGACCGGCAGCTGCTTGGCCCGTGGGTATTCCA	1367
Qy	381	AlaProSerArgProAlaSerArgPheGluValLeuArgTrpAspTyrPheThrGluGln	400
Db	1368	GCACCATCCCGCCCGGCTCCCGCTTTGAGGTGCTGCGCTGGGACTACTTCACGGAGCAG	1427
Qy	401	HisAlaPheSerCysAlaAspGlySerProArgCysProLeuArgGlyAlaAspArgAla	420
Db	1428	CACGCTTTCTCCTGCGCCGATGGCTCACCCCGCTGCCACTGCGTGGGGCTGACCGGGCT	1487
Qy	421	AspValAlaAspValLeuGlyThrAlaLeuGluGluLeuAsnArgArgTyrHisProAla	440
Db	1488	GATGTGGCCGATGTTCTGGGGACAGCTCTAGAGGAGCTGAACCGCCGCTACCACCCGGCC	1547
Qy	441	LeuArgLeuGlnLysGlnGlnLeuValAsnGlyTyrArgArgPheAspProAlaArgGly	460
Db	1548	TTGCGGCTCCAGAAGCAGCAGCTGGTGAATGGCTACCGACGCTTTGATCCGGCCCGGGGT	1607
Qy	461	MetGluTyrThrLeuAspLeuGlnLeuGluAlaLeuThrProGlnGlyGlyArgArgPro	480
Db	1608	ATGGAATACACGCTGGACTTGACGCTGGAGGCACTGACCCCCAGGGAGGCCCGGCC	1667
Qy	481	LeuThrArgArgValGlnLeuLeuArgProLeuSerArgValGluIleLeuProValPro	500
Db	1668	CTCACTCGCCGAGTGCAGCTGCTCCGGCCGCTGAGCCGCTGGAGATCTTGCTGTGCCC	1727
Qy	501	TyrValThrGluAlaSerArgLeuThrValLeuLeuProLeuAlaAlaAlaGluArgAsp	520
Db	1728	TATGTCACTGAGGCCTCACGTCTCACTGTGCTGCTGCTCTAGCTGCGGCTGAGCGTGAC	1787
Qy	521	LeuAlaProGlyPheLeuGluAlaPheAlaThrAlaAlaLeuGluProGlyAspAlaAla	540
Db	1788	CTGGCCCTGGCTTCTTGAGGCGCTTGCCACTGCAGCACTGGAGCCTGGTGATGCTGCG	1847
Qy	541	AlaAlaLeuThrLeuLeuLeuLeuTyrGluProArgGlnAlaGlnArgValAlaHisAla	560
Db	1848	GCAGCCCTGACCTGCTGCTACTGTATGAGCCGCGCCAGGCCAGCGCTGGCCCATGCA	1907

Qy	561	AspValPheAlaProValLysAlaHisValAlaGluLeuGluArgArgPheProGlyAla	580
Db	1908	GATGTCCTCGCACCTGTCAAGGCCACGTGGCAGAGCTGGAGCGGCGTTTCCCCGGTGCC	1967
Qy	581	ArgValProTrpLeuSerValGlnThrAlaAlaProSerProLeuArgLeuMetAspLeu	600
Db	1968	CGGGTGCCATGGCTCAGTGTGCAGACAGCCGACCCCTACCACTGCGCCTCATGGATCTA	2027
Qy	601	LeuSerLysLysHisProLeuAspThrLeuPheLeuLeuAlaGlyProAspThrValLeu	620
Db	2028	CTCTCCAAGAAGCACCCGCTGGACACACTGTTCTGCTGGCCGGGCCAGACACGGTGCTC	2087
Qy	621	ThrProAspPheLeuAsnArgCysArgMetHisAlaIleSerGlyTrpGlnAlaPhePhe	640
Db	2088	ACGCCTGACTTCCTGAACCGCTGCCGCATGCATGCCATCTCCGGCTGGCAGGCCTTCTTT	2147
Qy	641	ProMetHisPheGlnAlaPheHisProGlyValAlaProProGlnGlyProGlyProPro	660
Db	2148	CCCATGCATTTCCAAGCCTTCCACCCAGGTGTGGCCCCACCACAAGGGCCTGGGCCCCCA	2207
Qy	661	GluLeuGlyArgAspThrGlyArgPheAspArgGlnAlaAlaSerGluAlaCysPheTyr	680
Db	2208	GAGCTGGGCCGTGACACTGGCCGCTTTGATCGCCAGGCAGCCAGCGAGGCCTGCTTCTAC	2267
Qy	681	AsnSerAspTyrValAlaAlaArgGlyArgLeuAlaAlaAlaSerGluGlnGluGluGlu	700
Db	2268	AACTCCGACTACGTGGCAGCCCGTGGGCGCCTGGCGGCAGCCTCAGAACAGAAGAGGAG	2327
Qy	701	LeuLeuGluSerLeuAspValTyrGluLeuPheLeuHisPheSerSerLeuHisValLeu	720
Db	2328	CTGCTGGAGAGCCTGGATGTGTACGAGCTGTTCCCTCCACTTCTCCAGTCTGCATGTGCTG	2387
Qy	721	ArgAlaValGluProAlaLeuLeuGlnArgTyrArgAlaGlnThrCysSerAlaArgLeu	740
Db	2388	CGGGCGGTGGAGCCGGCGCTGCTGCAGCGCTACCGGGCCCAGACGTGCAGCGCGAGGCTC	2447
Qy	741	SerGluAspLeuTyrHisArgCysLeuGlnSerValLeuGluGlyLeuGlySerArgThr	760
Db	2448	AGTGAGGACCTGTACCACCGCTGCCTCCAGAGCGTGCTTGAGGGCCTCGGCTCCCGAACC	2507
Qy	761	GlnLeuAlaMetLeuLeuPheGluGlnGluGlnGlyAsnSerThr	775
Db	2508	CAGCTGGCCATGCTACTCTTTGAACAGGAGCAGGGCAACAGCACC	2552